

Work Order ID 75949

75949

Page 1

November-02-11 8:35:05 AM

Item ID: D206-667-101

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Crosstube Fwd

Stop *NS2*

Start Date: 02/11/2011 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 22/11/2011 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: M. J. Date: 11/11/02 Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D206-667-141	Rev C (DEO)
DSI9565	A

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-101 CHG004

S12/03/01

For MLJ 12-2-29

110

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

JW

12-2-23

Pho →

WIO: 75949

WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206-667-101 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12.02.24	120	CRUSHING IS OVER tol. R.C. Process	UP 12.02.24 BS1042	Acceptable. Tube will fail at Support before location of high crushing	N/A	S 12/02/24	UP 12.02.24 BS1042	S 12/02/24

NOTE: Date & initial all entries

Work Order ID 75949

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Page 2

November-02-11 8:35:05 AM

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Setup Start ***NS1***

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Stop ***NS2***

Item Name: Crosstube Fwd

Start Date: 02/11/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 22/11/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	BENDING MACHINE - CROSSTUBES	0.00							
120									
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	Bend tube as per Dwg D206-667-141 using CNC bender program 206B-fw and Folio FT _____								
130	QC15- Crosstube Dimensional Check	0.00							
130									
QC	Memo	0.00							
Quality Control									

Handwritten signature

Handwritten: 12-2-23

Handwritten signature

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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*** 1 ***

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*** 1 ***

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Approvals: _____ **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00

140

Crosstubes

.00

Crosstubes

Crosstubes

Memo

1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-141. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill jig DT8541 & DT8542 as per Dwg D206-667-141. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-141. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-141.
Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-141. Allow rivet to sit below surface to compensate for paint.

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-141
Inside of Cuff(Do not engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-141

POSITIVE RECALL

EFFECTIVE 12-02-23

AUTH

RELEASED 12-2-24

DATE

12/2/24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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November-02-11 8:35:05 AM

Page 4

Stop ***NR2***

Quality Control

no

12/2/24

W 12 02 24 (1)

W 12 '02-24 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Required Date: 22/11/2011 Req'd Qty: 1.00

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Reference:

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038 Or Issue P/O 16284 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
200									
QC	Memo	0.00							
Quality Control	Inspect for damage & ensure results are as per Dwg D206-667-103								

12-02-27

12/2/28

5/26/28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Start Date: 02/11/2011 **Start Qty:** 1.00 ***1***

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Required Date: 22/11/2011 **Req'd Qty:** 1.00 *** 1 ***

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Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

210

0.00

210

SprayPaint

0.00

SprayPaint

Spray Painting

Memo

1-Prime inside and outside crosstube as per QSI 005 4.2.1
*****Let tube sit up right for 30mins before hanging*****

P4500-P-23 Base Batch: 120133
P4500-C-23 Catalyst Batch: 120133

Start time: 11:30 Finish: 12:00

230

0.00

230

SprayPaint

0.00

SprayPaint

Spray Painting

Memo

1-Paint outside crosstube with White Imron as per QSI 005
4.2

Imron 55U white paint Batch: 120220
Imron 125S activator Batch: 120220

Start: 4:00 5:00

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Work Order ID 75949***75949***

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Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	QC14- Inspect Spray Paint	0.00							
240									
QC	Memo	0.00							
Quality Control									
250		0.00							
250	Crosstubes								
Crosstubes	Memo	0.00							
Crosstubes	1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe								
	2-Install supports with Proseal 890 per DSI9565 and QSI 015 A/R Proseal 890 Batch: <u>120072</u>								
	3- Torque bolts as per dwg								
	3-Install nut plates as per Dwg D206-667-141. Touch-up rivet heads with Imron paint.								

W/O:		WORK ORDER CHANGES					
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November-02-11 8:35:05 AM

Page 8

0.00

Quality Control

②

RB/2



GP

(Signature)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Work Order ID 75949

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Revision ID:

Stop ***NS2***

Item Name: Crosstube Fwd

Start Date: 02/11/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 22/11/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
290	Packaging	0.00							
290									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D206-667-101								
	Location: <u>E63</u>								
	PPP Rev: _____								
300	QC21- Final Inspection - Work Order Release	0.00							
300									
QC	Memo	0.00							
Quality Control									

12/3/11

12/3/11

mk
12.02.01

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

November-02-11 8:35:09 AM

Page 1

Work Order ID: 75949

75949

Parent Item: D206-667-101

D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 02/11/2011

Required Date: 22/11/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:F05.09.01Add holes for compatibility with Bell SkidtubesKJ/JLM
IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec
IPP Rev:H 08-07-28 update as per (par 08-013) DD verified by:EC
IPP Rev J 09.01.06 Per ECN 08-562 EC verified by:DD IPP REV:K
11.08.05 PER ECN 11-615 DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D2873-043		Manufactured	No			250	Each	38.0000	2	2			
-----------	--	--------------	----	--	--	-----	------	---------	---	---	--	--	--

D2873-043

Nut Plate Assembly

**

AS 12-2-28

Location	Loc Qty	Loc Code
LG	22	
72644	2	
75010	20	
LG052 79395	16	
73605	16	

D2873-045		Manufactured	No			250	Each	31.0000	2	2			
-----------	--	--------------	----	--	--	-----	------	---------	---	---	--	--	--

D2873-045

Nut Plate Assembly

**

AS 12-2-28

Location	Loc Qty	Loc Code
LG052 79318	31	
73529	11	
74985	20	

D2891-1		Manufactured	No			250	Each	20.0000	2	2			
---------	--	--------------	----	--	--	-----	------	---------	---	---	--	--	--

D2891-1

2.25 Support

**

AS 12-2-28

Location	Loc Qty	Loc Code
LG052 75176	20	
72822	20	

2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Picklist Print

November-02-11 8:35:09 AM

Work Order ID: 75949

75949

Parent Item: D206-667-101

D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 02/11/2011

Required Date: 22/11/2011

Start Qty: 1.00

Required Qty: 1.00

D3595-063-395

Manufactured No

250

Each

130.0000

4

4

D3595-063-395

RUBBER CUSHION

**

AL 12-2-28

Location

Loc Qty

Loc Code

LG

129

70975

52

74300

77

LG055

1

63368

1

MS20601-AD4W8

Purchased

No

250

Each

249.0000

14

14

MS20601-AD4W8

RIVET

**

AL 12-2-28

Location

Loc Qty

Loc Code

LG

100

108521

100

LG051

120450

149

117106

7

117381

3

117979

3

118572

36

119107

100

AN5-30A

Purchased

No

270

Each

62.0000

4

AN5-30A

BOLT

**

M120717

12/3/15 P 80

Location

Loc Qty

Loc Code

ST339

62

117514

9

118451

3

118706

50

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Parent Item: D206-667-101

D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 02/11/2011

Required Date: 22/11/2011

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased

No

270

Each

219.0000

4

4

**

M120717

SD SP

AN5-32A

Bolt

Location

Loc Qty

Loc Code

ST339

219

118422

44

118628

50

118983

25

119328

100

AN5-7A

Purchased

No

270

Each

2,841.000

10

10

**

SD

SP

AN5-7A

Bolt

Location

Loc Qty

Loc Code

ST337

15

117313

14

118422

1

ST516

2826

119017

2826

AN960JD516

NAS1149D0563J

Purchased

No

270

Each

0.0000

18

18

**

M118614

12/3/11 SD SP

AN960JD516

Washer

November-02-11 8:35:09 AM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES					
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D206-667-101

Parent Item Name: Crosstube Fwd

Start Date: 02/11/2011

Required Date: 22/11/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

270

Each

2,462.000

4

4

MS21042L5

Nut

**

SP 12/3/11 [SP]

Location

Loc Qty

Loc Code

ST300

962

116105

5

116548

53

117441

34

117611

74

118179

496

118910

300

ST518

1500

119109

1500

MS21920-20

Purchased

No

270

Each

80.0000

4

4

MS21920-20

Clamp (per MIL-DTL-8783C)

**

AD 12-2-28

Location

Loc Qty

Loc Code

LG050

80

116799

10

118649

20

119386

50

D206-667-101TRN

Manufactured

No

110

Each

2.0000

1

1

D206-667-101TRN

Crosstube Turning Detail

**

B78819

①

JW 12-2-23

Location

Loc Qty

Loc Code

LG003

2

50518

1

50519

1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

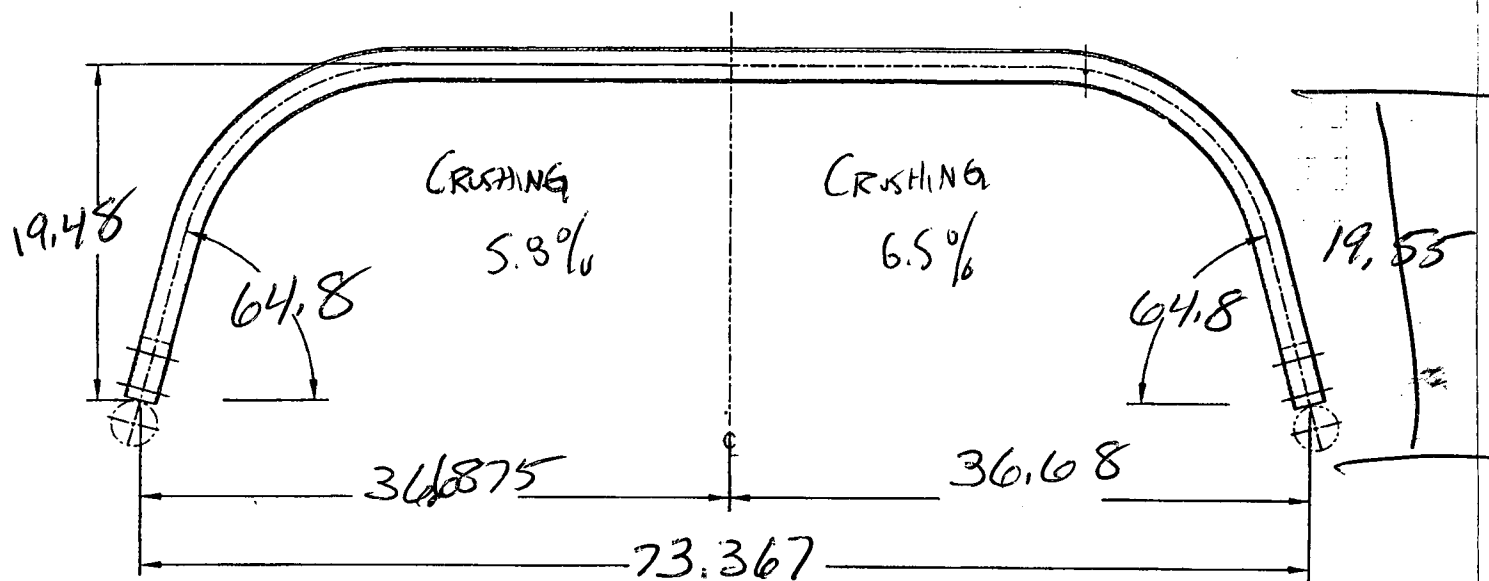
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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	75949
Description: Crosstube High Fwd (206B)		Part Number:	D206-667-101
Inspection Dwg: D206-667-141 Rev: C		Page 1 of 1	

Required Dimension	Min	Max
Height	19.41	19.67
1/2 Span	36.47	36.73
Angle	65	67
Total Span	72.94	73.46



Comments
Chris P. needs to co-sign as per Linda L.

Min. 25 passes

QC15 Inspection	DP
Date	12-2-24

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.07.30	Dimensions revised per Dwg Rev C	KJ	

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NOTE: Date & initial all entries

Item	Qty -141	Part Number	Description
1	X	D206-667-141	CROSSTUBE ASSEMBLY (206B HIGH FWD)
2	1	D6001-105	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6001-105
FINISHED LENGTH = 93.18±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-141" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 11.3 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 75949 M.C.5

11/11/02

DEO ATTACHED

OCW #11-615
11.07.26

UNDER REVIEW

RELEASED
08/11/12 M.C.5

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN C4-3, C5-3 & D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	RF	D206-667-141	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE ASSY (206B HIGH FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

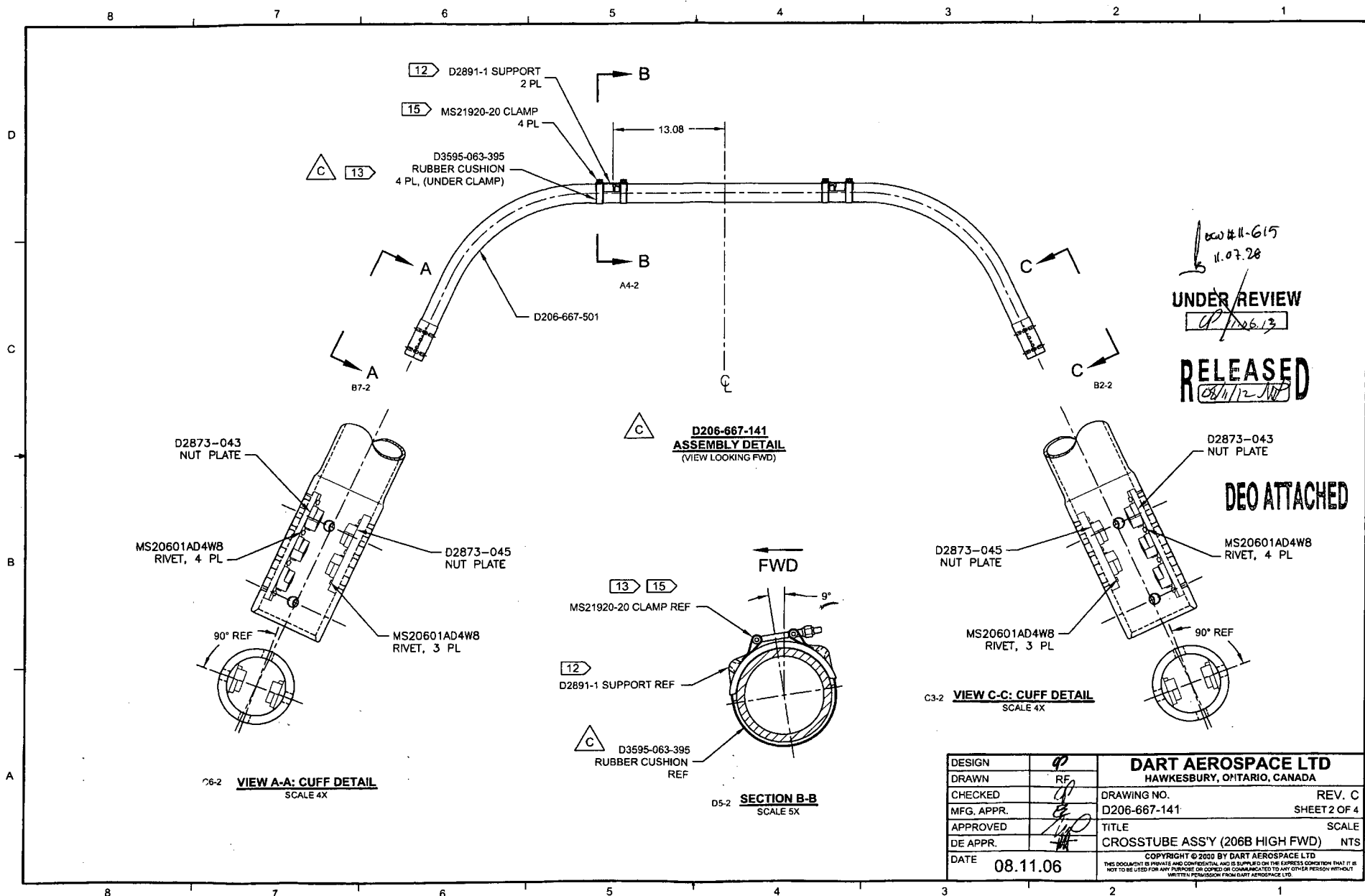
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

75949



DESIGN	7	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-141	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASSY (206B HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2009 BY DART AEROSPACE LTD	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

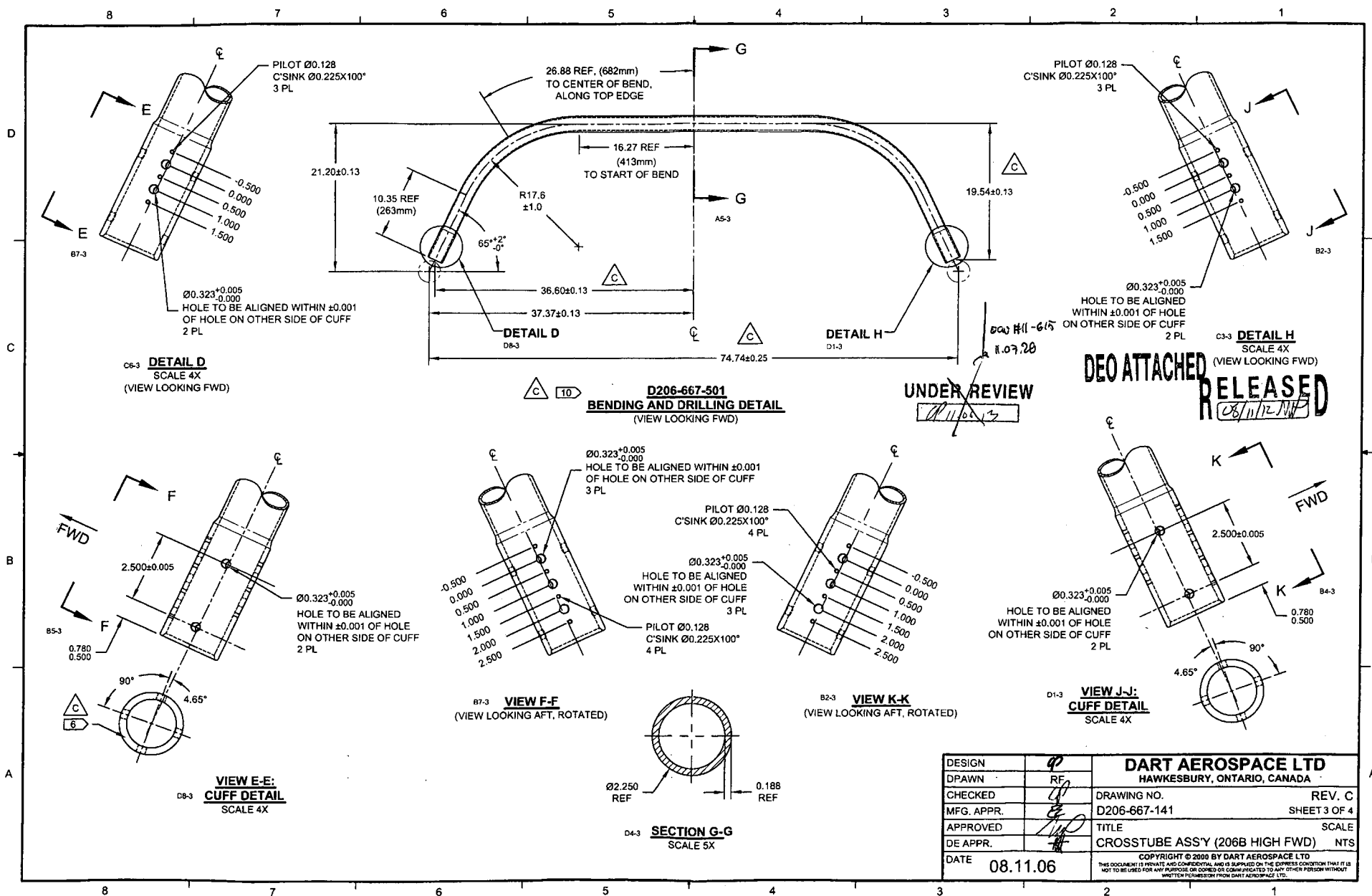
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

75949



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

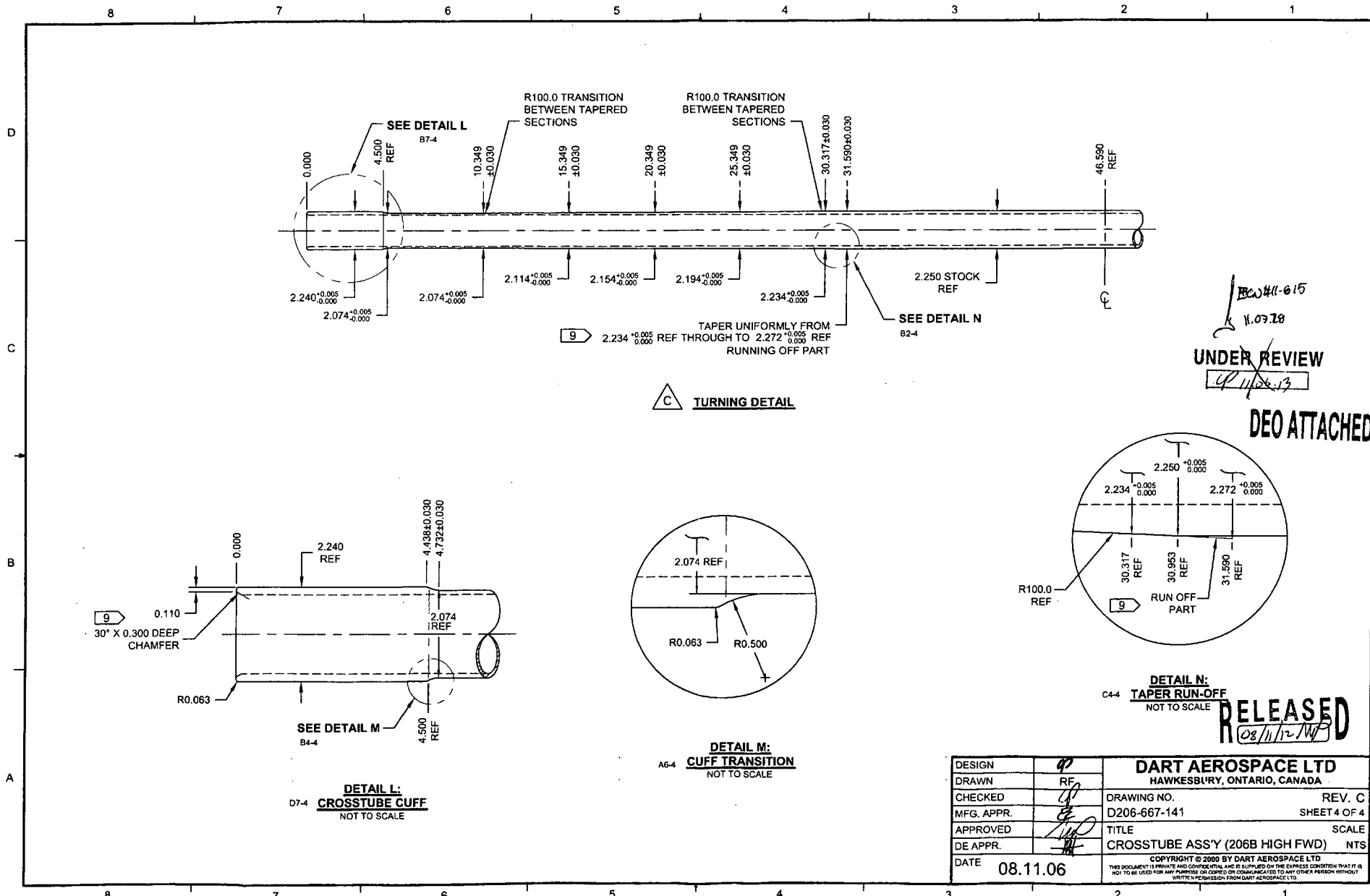
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

75949



BCO#11-015
11.07.18
UNDER REVIEW
UP 11/26/13

DEO ATTACHED

DETAIL N:
TAPER RUN-OFF
NOT TO SCALE

RELEASED
08/11/12/WP

DESIGN	DP	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	DP	DRAWING NO.	REV. C
MFG. APPR.	DP	D206-667-141	SHEET 4 OF 4
APPROVED	DP	TITLE	SCALE
DE APPR.	DP	CROSSTUBE ASS'Y (206B HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR LOANED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

75949

DRAWING NO. D206-667-141	TITLE CROSSTUBE ASS'Y (206B HIGH FWD)	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-141-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>MD</i>	APPROVED <i>MD</i>		DE APPR. <i>MD</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:**IS:**

Item	Qty -141	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
MD

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
		X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
			X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
				X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
					X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
						X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1	1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2		1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3			1				D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4				1			D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5					1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6						1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10	*2	*2	*2		*2		D2891-1	SUPPORT
11				*2			D2892-1	SUPPORT
12						*1	D2894-1	SUPPORT
13	*4	*4	*4		*4		D3595-063-395	RUBBER CUSHION
14				*4			D3595-063-450	RUBBER CUSHION
15						*2	D3595-075-430	RUBBER CUSHION
16	*4	*4	*4		*4		MS21920-20	CLAMP
17				*4		*4	MS21920-22	CLAMP
18						*2	MS21920-25	CLAMP (OR MS21920-24)
19	4	4	4		4		AN5-32A	BOLT
20				4		4	AN5-34A	BOLT
21	4	4	4	4	4	4	MS21042L5	NUT (OR MS21042-5)
22	8	8	8	8	8	8	NAS1149C0563J	WASHER (OR AN960JD516)
23						*2	D3190-1	CHAFING SHIELD
40	*2		*2	*2	*2	*2	D2873-043	NUT PLATE
41	*2		*2	*2	*2	*2	D2873-045	NUT PLATE
42		2					D2872-043	NUT PLATE
43		2					D2872-045	NUT PLATE
44	10		10				AN5-7A	BOLT
45		10		10	10	10	AN5-10A	BOLT
46	4	10	4		4		AN5-30A	BOLT
47				4		4	AN5-32A	BOLT
48			12				AN970-4	WASHER (OPTIONAL)
49		6					MS21042L5	NUT (OR MS21042-5)
50	10	12	10	10	10	10	NAS1149C0563J	WASHER (OR AN960JD516)
60		1					D3039-3	CENTER DRILL (TOOLING, NOT INSTALLED)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/-143/-241/-243 & D407-667-145/-245
ASSEMBLIES ABOVE

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Revision: D

Date: 11.05.01



LIQUID PENETRANT TEST REPORT

P- 14907

CLIENT	<u>DAT Aero Space</u>	DATE	<u>FEB. 27. 2012</u>	PAGE	<u>1</u>	OF	<u>1</u>
ATTENTION	<u>LINDA</u>	ACUREN JOB No.	<u>185-12-00053</u>	TIME	AM <input checked="" type="checkbox"/>	PM	<input type="checkbox"/>
ADDRESS	<u>1270 ABERDEEN ST.</u>	PO/WO No.	<u>---</u>	WORK LOCATION	<u>same</u>	ACCEPTANCE STD.	<u>ASTM 1417/PSI-638</u>
	<u>ON</u>			REV./DATE	<u>2005</u>		
PROJECT	<u>F.P.I. on CROSS TUBES</u>						
ITEM(S) EXAMINED	<u>(8) CROSS TUBES</u>						

JOB DESCRIPTION	PROCEDURE No.	LT <u>002</u> REV./DATE <u>2008</u>	TECHNIQUE No.	LT <u>1412</u> REV./DATE <u>2003</u>	
PART No.	<u>SEE RESULTS</u>	MATERIAL	<u>Aluminum</u>	THICKNESS	<u>Various</u>
SCOPE	<u>A DET FLUORESCENT LIQUID PENETRANT INSPECTION WAS CONDUCTED ON THE EXTERNAL AREA.</u>				

TEST DETAILS					
METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	<u>DAVID BULL</u>		BLACK LIGHT S/N	<u>16459</u>	<input type="checkbox"/> OUTPUT > 1000 μ W/cm ²
PENETRANT	<u>2607</u>	MINIMUM DWELL TIME	<u>45</u>	MIN.	<input type="checkbox"/> AMBIENT < 2 fc
PENETRANT REMOVER	<u>120</u>	MINIMUM DRY TIME	<u>>10</u>	MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT 100 fc @ SURFACE
DEVELOPER	<u>54052</u>	MINIMUM DWELL TIME	<u>10</u>	MIN.	OTHER <u>LABINO</u>
DEVELOPER TYPE	<input type="checkbox"/> NON AQUEOUS	<input checked="" type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	LIGHT METER S/N	<u>10988 66</u>
				CAL DUE DATE	<u>JUN 27-2012</u>

TEST SURFACE					
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < - 4°C/ 20°F	<input type="checkbox"/> - 4°C/ 20°F TO 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

RESULTS-	<input checked="" type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL
<div><div><div>1 CROSS TUBE W.O.# 75949 ✓</div><div>1 CROSS TUBE W.O.# 75948 ✓</div><div>1 CROSS TUBE W.O.# 79388 ✓</div><div>1 CROSS TUBE W.O.# 79387 ✓</div><div>1 CROSS TUBE W.O.# 80135 ✓</div><div>1 CROSS TUBE W.O.# 80134 ✓</div><div>1 CROSS TUBE W.O.# 77538 ✓</div><div>1 CROSS TUBE W.O.# 77537 ✓</div></div><div>→ <u>NO ROUND INDICATION</u></div><div><u>5/12/12/28</u></div></div>	

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	<u>Andrew Sheldon</u>	SIGNATURE	<u>ASheldon</u>	DTR #	<u>E 03814</u>
TECHNICIAN (SIGNATURE):	<u>[Signature]</u>			REPORT	
NAME (PRINT):	<u>Michael S. [Signature]</u>			REVIEWED BY:	
	1 st TECHNICIAN		2 nd TECHNICIAN	NAME	INITIALS
CGSB LEVEL	<u>F</u> SNT LEVEL <u>F</u>	CGSB LEVEL	<u>---</u> SNT LEVEL <u>---</u>		
CGSB REG. No	<u>0606</u>	CGSB REG. No	<u>---</u>		

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